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Peanut Snack and Peanut Spread

Potential New Products

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SUMMARY

"Peanut Snack" and "Peanut Spread"--two new products--have been successfully developed and marketed experimentally. Peanut Snack, in several flavors, is a sliceable product packaged in an 8-ounce roll. Peanut Spread is a flavored and spreadable product, packaged in an 8-ounce glass jar. The Georgia Agricultural Experiment Station had previously produced these or very similar products in its laboratory. But it was not until 1951 that marketing and acceptability tests were made after the products had been produced in a commercial plant. Comparative tests in the marketing of these new forms of peanut products were carried out in retail stores in the State of Georgia.

The decline in per capita consumption of peanuts for edible uses* since 1945 has resulted in a strong demand by the peanut industry for research into ways and means of expanding the market for edible peanut products. Inadequate market outlets have resulted primarily from the increase in peanut production brought about by the demand for peanut oil and proteins during World War II. A study was planned in 1949 to consider the abnormal conditions in the peanut industry and to try to improve the unsatisfactory market situation.

In view of the need to expand the market for peanut products, research into ways of increasing the consumption of peanut products, such as peanut butter, offered the greatest opportunities. To test consumer reaction to the products developed by the Georgia Agricultural Experiment Station, a minimum of 8,000 pounds of No. 1 shelled peanuts was set aside to be used in the manufacture of these new products known as Peanut Snack and Peanut Spread, recommended by the Georgia Experiment Station. In 1950 and 1951 the production and distribution of the products were accomplished under an Agricultural Marketing Act contract.

Results of the limited experiment showed that consumers to whom the products were given indicated an appreciation of the opportunity to choose products of different flavor, consistency, and packaging in addition to the usual peanut butter. Furthermore, the results showed that the new products could be produced at approximately the same cost as peanut butter.

A consumer reaction survey of 1,114 consumers of Peanut Snack showed approximately 78 percent of the consumers testing this product reacted favorably to it; of this 78 percent, less than one-half liked the product with qualifications. The most frequently expressed likes of the consumers were based on the flavors and the blend of such flavors with peanut butter. More than 80 percent of the consumers approved the new type package, without qualification. Some of the things they liked were the size, shape, and convenience of storage, handling, and serving. Seventy-two percent of the consumers surveyed said they would buy Peanut Snack if their grocers stocked it.

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*"Edible uses" as used in this report, refers to the use of peanuts in the form of peanut butter, salted and roasted peanuts, and confections, but does not include peanuts crushed for oil and meal.

Peanut Spread was handled in the market channels used for ordinary peanut butter. Consumer reaction to Peanut Spread was not studied in the same detail as that for Peanut Snack. However, some conclusions were indicated by the tasters of the product at the Georgia Experiment Station and by the distribution of the Spread through retail establishments. Although it was readily acceptable to customers, it is believed that in the long run it would come to be looked upon as another kind of peanut butter.

The manufacture of one of the new products, Peanut Snack, differed from that of peanut butter in two respects; (1) "Continuous operations" were interrupted to mix ingredients in a dough mixer to insure the equal distribution and even temperature essential until mixing is accomplished; and (2) the packaging in transparent film was done by hand labor. Results indicate that these operations could be effectively mechanized and that processing could be a "continuous operation" as in peanut-butter manufacturing.

The experimental manufacture and processing of these new products provided an effective method of selection and refinement of formulas and techniques, and a means of estimating the costs and feasibility of processing on a commercial basis. Introduction of the products to consumers through established market channels offered one of the best means of testing transportation and storage characteristics, and of observing consumer appeal when the new foods were displayed among established products of their kind. The consumer survey provided an evaluation of the product as to package, taste, and use.

PEANUT SNACK AND PEANUT SPREAD: POTENTIAL NEW PRODUCTS

3a By C. B. Gilliland, ~~marketing research specialist,~~
and Thomas B. Smith// ~~agricultural economist~~

PEANUT PRODUCTION AND PROBLEMS OF DISTRIBUTION

Peanuts are produced in this country primarily for edible uses and only in unusual circumstances are the prices of peanuts for oil competitive with the prices of peanuts for edible uses. The production of picked and threshed farmers' stock peanuts, which reached an all-time high of approximately 2.3 billion pounds in 1948, decreased to 1.6 billion pounds in 1951. During the last 5 years, about 72 percent of the picked and threshed production of farmers' stock peanuts was used for edible products, primarily for peanut butter and salted peanuts and in candy. Per capita consumption of peanut butter, which accounts for about one-half of the total use of peanuts for edible purposes, dropped from 2.0 pounds in 1945 to 1.5 pounds in 1950. The decline in per capita consumption since 1945 of all edible peanut products, together with a lessened demand for peanut oil, has resulted in losses to the Government in its price-support program[1] and reimposition of acreage allotments and marketing quotas, and has shown the need for ways of retaining and expanding existing markets and developing new ones.

Recent technical developments in the mechanization of production and harvesting of peanuts are factors of economic importance. Potential expansion of production made possible by increased mechanization of the industry adds to the need for broader market outlets through greater diversification of uses and a more complete utilization of peanuts in their highest form, normally edible uses. The experimental work on Peanut Snack and Peanut Spread at the Georgia Experiment Station was used to this end.

Peanut production in the United States in 1950 approximated 2 billion pounds having a farm value of more than 200 million dollars. Peanuts are an important basic money crop in the southern and southwestern United States. In 1950 approximately 23 percent of the domestic peanuts came from the Virginia-Carolina peanut-production area, consisting of Virginia, North Carolina, Tennessee and a part of South Carolina; approximately 54 percent from the southeastern peanut-producing area, consisting of Georgia, Florida, Alabama, Mississippi and a part of South Carolina; and 23 percent from the southwestern peanut-producing area, consisting of Arkansas, Louisiana, Oklahoma, Texas, and New Mexico. Because the bulk of South Carolina production is in the southeastern area, that State's total has been tabulated as in the southeastern area.

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[1] The price-support programs of the Government are based on the prices of peanuts for edible uses.

Six of these States in 1950 produced approximately 95 percent of the total peanut crop. They are: Georgia, 34 percent; Alabama, 16 percent; Texas, 16 percent; North Carolina, 12 percent; Virginia, 11 percent; and Oklahoma, 6 percent (table 12, Appendix).

Producers of peanuts are mostly farmers on family-size farms on which production is carried on principally by members of the family, whose chief source of income is the peanuts they produce. The greatest expansions in acreage and production, and the most important technical developments in peanut production have occurred since 1941 (table 13, Appendix). Expansion resulted from demands during World War II for oil and protein foods above the normal peacetime demand. During the war and postwar periods there have been several developments of economic importance in the peanut industry, among which are: (1) Increased mechanization of production resulting in lower cost and in eliminating the need for a large supply of farm labor; (2) expansion of production to new areas easily adapted to mechanized production; and (3) experimental development and introduction of new peanut products.

Since World War II the demand for peanuts for food and for oil has declined. Edible uses declined from about 6 pounds (shelled basis) per capita in 1945 to about 4 pounds in 1950. This decreased consumption, together with large postwar production, has emphasized the need for market expansion in edible-peanut trade channels.

EDIBLE PEANUT USES

In terms of total quantity, peanut consumers apparently prefer their peanuts in ground form, such as peanut butter, as is shown in Appendix table 14, which classes shelled peanuts by primary use for the seasons 1948 to 1951. In addition to the shelled peanuts used for edible purposes, approximately 75 million pounds of peanuts in the shell were used for roasting. Of the shelled peanuts for edible uses during the three seasons, 50 percent or more were used during each season in the production of peanut butter. Peanut salting is the second largest consumptive use, accounting for approximately 25 percent of shelled edible peanuts each season. Third largest use is the candy industry, which consumed 25 percent in the 1949-50 season and less than 25 percent in the 1948-49 and 1950-51 seasons.

The term "peanut butter" is rapidly becoming a generic name applying to peanuts ground to any degree of fineness, after being cooked to any extent, and used as a spread or in candies, bakery products, ice cream, or other food products.

Spanish-type peanuts predominate in the manufacture of peanut butter, runners being next in importance, and the Virginia type third (table 15, Appendix). The use of runners in peanut butter has been increasing in the last few years.

The quantity of peanuts used in peanut butter annually has been reported for recent years; the figures are incomplete for the years prior to 1943 (table 16, Appendix). The War Food Administration published data from a survey of the peanut-consuming industries showing the consumption of shelled peanuts in candy, salting, and peanut butter in 1943, and the Bureau of Agricultural Economics has collected data on the consumption of shelled peanuts by major uses since 1943.

The nutritional values of peanuts explain their expanded use for food in wartime during the shortage of other protein foods. Peanut butter is one of the cheapest and also one of the most nourishing foods on the market. Appendix table 17 shows how it compares with some other foods.

About the first appearance of peanut butter in commerce was in 1890 when a physician in St. Louis, Mo., prescribed it for some of his patients as a nutritious, easily digested, high-protein food, low in carbohydrates.[2] It was later recommended by northern sanatoriums as a food for invalids. The idea spread rapidly until peanut butter manufacture came to occupy its present dominant position in the market for shelled peanuts.

The manufacture of peanut butter is a relatively simple procedure, consisting of blanching and grinding dry roasted peanuts to the desired degree of fineness, with salt (usually 1 to 1.75 percent) added to taste. However, the variety and condition of peanuts, rate and degree of cooking, rate of cooling, fineness of grinding, type and proportion of stabilizing agents, kind of containers, and methods and length of storage may result in products of widely different qualities. This is attested by the wide range in flavors, colors, and spreadability of peanut butter.

Peanut butter may be made from a good grade of any variety of peanuts available. At one time it was believed that the best flavor and consistency in peanut butter was obtained by blending Virginia and Spanish peanuts. This practice is no longer followed by most peanut butter manufacturers.

Peanut butter and the methods of manufacturing it are continually changing. The most popular brands on the market now are quite different from those 10 or 20 years ago. They differ in consistency, flavor, type of container, and in methods of manufacture and distribution.

Large quantities of peanut butter are used by the average family. Children eat most of it, although women use a considerable amount. Very little peanut butter is eaten by babies, men (of any age), elderly women, or by the obese or by diabetics. Families with children usually carry a supply on hand. Its high protein and fat content renders it especially suitable for combining with carbohydrate foods. One of the greatest assets of peanut butter is that almost everyone likes the flavor.

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[2] Year Book, National Peanut Council, Inc., 1942.

Food technicians at the Georgia Experiment Station suggest that peanut butter should be eaten with bread, preferably those kinds with grainy texture, such as whole-wheat, raisin, or cracked-wheat. Crackers and crisp cookies as well as cookies containing oatmeal, corn meal, soybean meal, or whole-wheat flour are good with peanut butter. Hot biscuits, rolls, or other breads with a soft, moist crumb are least desirable. Flavored and sweetened peanut butter should be eaten slowly to allow flavors and sugars to dissolve in the mouth. In previous work of the Georgia Experiment Station,[3] flavors found to be highly compatible with or to accentuate peanut flavors were orange, maple, vanilla, garlic, celery, dill, and malt; others that appeared to be good were lemon, lime, cinnamon, and fruits such as dates and figs. Chili, tea-like or peppery flavors, and chocolate had mediocre acceptability.

Changes in peanut butter have been aimed at: (1) Improving its physical stability--preventing the accumulation of oil on the surface and simultaneous packing in the bottom of the container--chiefly by the addition of hydrogenated oil; (2) preventing rancidity by exclusion of air through use of vacuum, use of antioxidants, and refrigeration; (3) improving or changing the flavor by the addition of dextrose, sucrose, honey, yeast, or other sweeteners or flavors; (4) improving the nutritive qualities by the addition of minerals or vitamins; and (5) developing new outlets through peanut products similar to peanut butter.

Previous work by the Georgia Experimental Station indicates broad commercial possibilities of modified peanut butter. Not only can homogeneous mixtures with other ingredients be made, but with suitable equipment, peanut butter can be molded around centers of hard cream, fudge, hard fruit, jelly, or caramel. Also, it can be used as centers of round, flat, or square bars, coated with hard cream, hard fruit, jelly, or pastry. Further modifications may be made by using pastries of different flavors--cheese, malt, ginger, cinnamon--and of different textures by using oatmeal, whole-wheat, rye, or soya flour.

Wrapped or unwrapped, ready-to-serve patties, with peanut butter centers, may be packaged in cartons. These would require no scooping, breaking, or slicing for serving, and would be especially suitable for parties, teas, luncheons, or midafternoon snacks. Peanut butter mixed with other sweetened and flavored ingredients is tasty and generally liked when served in the home, snack bars, or sandwich shops.

Peanut butter spreads or sliced peanut butter with orange, maple, or other flavors might have many uses other than as spreads or fillers. These include uses in refrigerated pies, cookies, cakes, cold plates, and salads.

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[3] Peanut Butter, Food Industries, 21: 186-191, 1949, Georgia Agricultural Experiment Station.

PEANUT BUTTER USES

Informal contacts with a limited number of manufacturers and distributors of peanut butter indicate that peanut butter has a universal appeal as a spread on bread and crackers, particularly among children under 14 years of age.

It is indicated that sales might be stepped up by distributors suggesting new uses in baking, combinations with fruits and vegetables, or other foods, giving information on container sizes, type, emphasizing consistency and texture, and keeping qualities.

SOME NEW PRODUCTS DEVELOPED BY INDUSTRY

PEANUT BUTTER AND CHEESE

One of the most recently developed, modified peanut butter products is a blend of peanut butter and aged cheese. This product is manufactured by combining aged cheese, peanut butter, hydrogenated vegetable oils, and salt. It spreads easily and tastes good. It is packed in a 12-ounce glass jar with a slide-on metal top, so that the jar may be reused as a drinking glass.

HONEY-PEANUT BUTTER

Honey with peanut butter consists of a blend of honey, peanut butter, and vegetable shortening. After a few hours of refrigeration it can be sliced. It makes a delicious confection, either sliced or as a spread. It also makes an excellent center for chocolate sweets. It is packed in 7½-ounce paraffin-coated cardboard cups. Honey with peanut butter stores well. A shelf life of approximately 6 months is claimed; if kept for a longer period unrefrigerated, it acquires an off-flavor and darker color. However, it does not become rancid. If refrigerated it keeps indefinitely.

PEANUTS AND CORN MEAL

A new peanut product made from a formula mostly of peanuts and corn meal was manufactured in early 1952 in North Carolina on an experimental basis. It is said to have met with instant acclaim by those who used it. Another firm has found that a special mixture of peanut butter and corn meal gave a product which met with instant acceptance by those who tried it. Neither of these products has been manufactured and distributed in large quantities, but large commercial production is planned.

PEANUT BUTTER AND JELLY

A combination of peanut butter and grape jelly to produce a single spread has proved highly acceptable to those testing it. This spread has the consistency of apple butter. It has not yet been manufactured and distributed in large quantities.

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NEW PEANUT PRODUCTS DEVELOPED UNDER CONTRACT AT THE GEORGIA AGRICULTURAL EXPERIMENT STATION

A research contract was executed with the Georgia Agricultural Experiment Station in May 1950 which provided that a minimum of 8,000 pounds of No. 1 shelled edible peanuts be used in the manufacture and distribution of new or different edible peanut products. Such products were to be in a new form or new package, and with added flavors, based on laboratory results previously reported.[4] To arrive at a satisfactory economic evaluation of processing, marketing, and consumer reaction to new or different peanut products, it was deemed necessary to have actual experience with the problems of manufacturing such products and distributing them to consumers. Therefore, the experiment was conducted in two different phases and results fully recorded.

THE MANUFACTURE OF PEANUT SNACK

In the first phase of this experiment, conducted during the winter of 1950-51, about 4,000 pounds of Spanish peanuts were made into Peanut Snack--a new product, in a new type of package--with the hope of reaching consumers other than those who use peanut butter regularly. The name of this product was chosen at that time, and the three flavors--orange, maple, chili--were selected. It was handled under common refrigeration (40° to 48° F.). The product was packed in 1-3/4-inch transparent film tubing, 8 ounces of product to the tube, and six tubes to the carton.

Peanut Snack was intended for serving in a wide variety of ways, especially as between-meal snacks or at afternoon teas, or cocktail parties. Specific uses were: As a confection, on salad plates, as hors d'oeuvres, in sandwiches, in soups, topping for desserts, in pies, and in ice cream. It is a very nutritious product, being high in protein and fat and low in carbohydrates but since most of the carbohydrate is dextrose, Peanut Snack is valuable as a source of quick energy. Other ingredients are dried milk and malted milk. Peanut Snack was intended to have a firm consistency so that it would slice easily, a texture that was smooth yet free of gumminess, and a flavor that was palatable and distinctive.

Production of this product was carried out by a large, established producer of peanut butter, located in the heart of the Spanish peanut-producing area in Georgia, under the supervision of the contractor. In August 1950 a preliminary run was made to test plant equipment and to see whether the laboratory formulas needed adjustment for volume production. Several hundred pounds of the product were made at this time, but this lot was not packaged in a marketable form. During January and February 1951, after all the supplies and equipment were obtained, 4,000 pounds of Peanut Snack were produced and packaged for distribution.

An itemized list of processing steps in the manufacture of Peanut Snack is as follows:

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[4] Georgia Expt. Sta. Bul. No. 243. "Improving the Quality of Peanut Butter." October 1945.

Processing Peanuts. No. 1 grade peanuts, principally of the Spanish type, were used in the manufacture of Peanut Snack. The peanuts were recleaned and regraded, dry-roasted, cooled, blanched, transferred to the peanut butter grinders, and ground to the desired degree of smoothness. Each process thus far was the same as that in the manufacture of regular peanut butter. The operational difference at this point was that, whereas in the manufacture of regular peanut butter hydrogenated oil is automatically fed into the lines, in the manufacture of Peanut Snack the ingredients were mixed with a dough mixer. This deviation was to insure equal distribution of ingredients in the proper proportions and to prevent the sticking and gumming up of grinders, and eventual overheating of the machinery (figs. 1 and 2).

Mixing Ingredients. Mixing the ingredients and filling the casings were batch operations that required much more time and labor per unit than would be expended in larger operations. The peanut butter was taken directly from the grinders, placed in a steam-jacketed kettle and heated to 180° F. Then it was removed from the kettle and transferred to the mixing bowl where the liquid hydrogenated oil (melting point 142°) was added and thoroughly mixed with the peanut butter.

The next ingredient to be added was the flavoring, which was easily dispersed throughout the mixture. This was followed by the addition of the combined dry ingredients. When the dry ingredients were added the mixture thickened considerably. To prevent it from setting before being packaged, the temperature was held at a minimum of 150° F.

Table 18 in the Appendix shows the formulas on a 100-pound basis for the three flavors of Peanut Snack produced. Table 19 shows processing cost for 1,000 pounds of the finished product by flavor.

Filling Packages. At this point in the lines of operation the manufacture of Peanut Snack again differs from regular peanut butter operations. Peanut butter is automatically packaged in continuous lines of operation, whereas, Peanut Snack was packaged by hand. The Peanut Snack was transferred to hand-operated, piston-type sausage stuffers for filling, and by turning a hand crank the material was extruded through a filling spout into the packaging tube. The transparent film tubing used was 1-3/4 inches in diameter. The ends of the package were tied off with black nylon cord. Although this operation was performed by hand labor, it could be mechanized.

It was found that if the Peanut Snack were allowed to cool to 140° F. before stuffing into tubes, it became so stiff that it was extremely difficult to force through the stuffing machines and it was practically impossible to prevent air cavities in the product while filling.

Labeling and Packing. The labels for Peanut Snack were very attractive, with different colors for each of the three flavors for easy identification. They were 2½ inches in width, and contained the name of the product, ingredients, and suggested uses (figure 3).

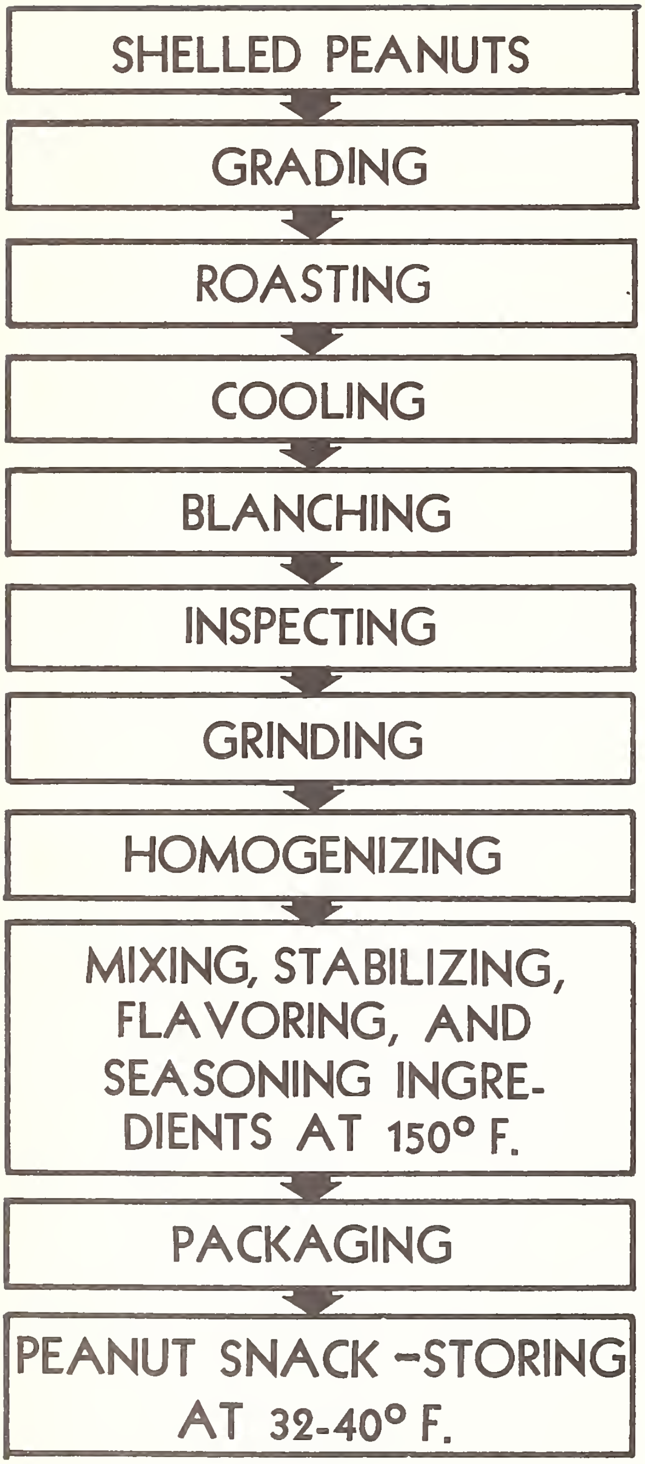
SHELLED PEANUTS
GRADING
ROASTING
COOLING
BLANCHING
INSPECTING
GRINDING
HOMOGENIZING
MIXING, STABILIZING, FLAVORING, AND SEASONING INGREDIENTS AT 150° F.
PACKAGING
PEANUT SNACK - STORING AT 32-40° F.

Figure 1.--Diagrammatic flow sheet for the manufacture of Peanut Snack. (Note: The first seven steps are the same as for the manufacture of ordinary peanut butter whereas the last three are batch operations.)

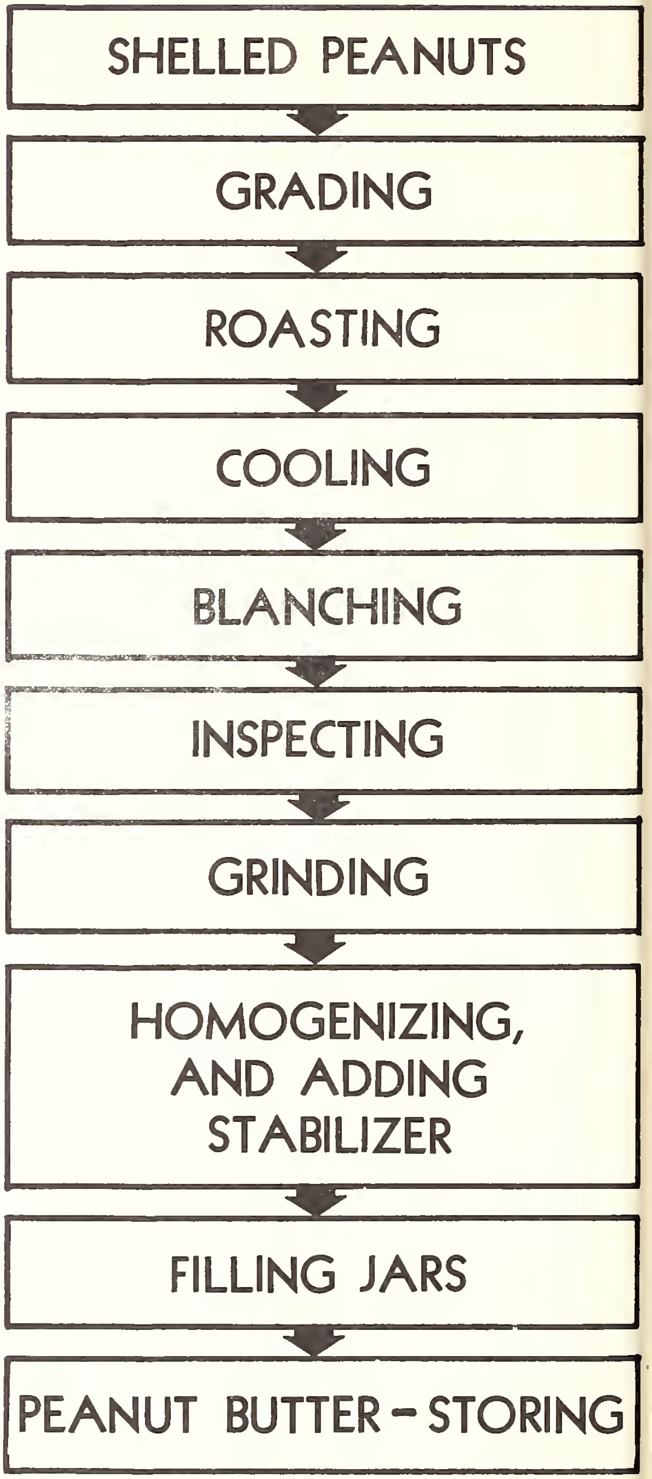

Figure 2.--Diagrammatic flow sheet for the manufacture of peanut butter.

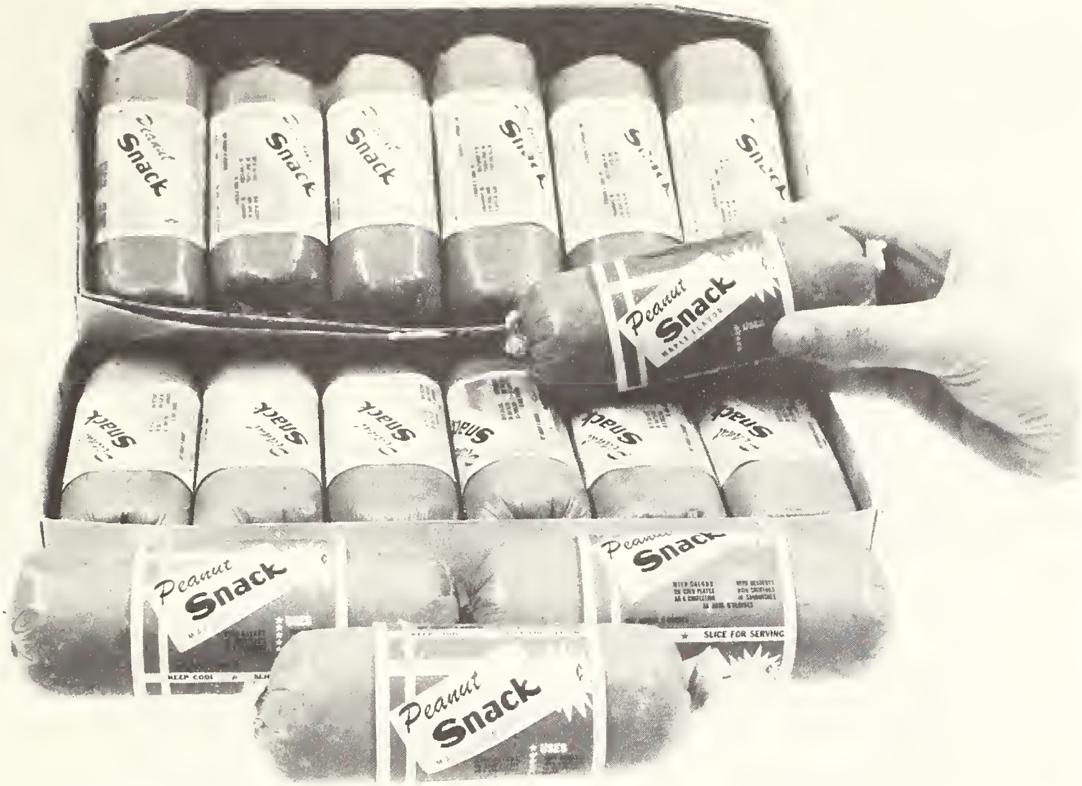

Figure 3.--Peanut Snack was packed in 8-ounce packages, six packages to the carton. Label for the orange-flavored snack was orange-colored, that for chili-flavored snack was red, and for maple-flavored snack light brown.

Six labeled packages were placed in a white cardboard carton, and the carton top was secured with gummed labels. The cartons were 10½ inches long, 5 inches wide, and 1-5/8 inches deep. Fourteen of these cartons were placed in a corrugated cardboard shipping case and the case sealed.

Storing. To prevent the product from softening and the oil from crawling from the ends of the packages, Peanut Snack was held under refrigeration (32° to 40° F.) from the time it was made until it was sold in retail outlets.

Labor Requirements and Cost. The labor used to process 1,000 pounds of peanuts yielding 830 pounds of Peanut Snack was 158 man-hours, the labor cost per finished pound being 14.8 cents.[5]

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[5] The computation of amount of labor used for the experimental processing of this product was based on the first 4,000 pounds of peanuts, and accounts for all steps in processing and some experimenting. The man-hours were based on the actual operating time and calculated for the minimum of persons employed, but did not include loss of time due to poor integration of different phases of operation or time lost in changing type-flavors of product or making machinery adjustments. The clock hours of all employees used would almost double the minimum operating man-hours here reported. It is estimated that the labor for manufacturing a similar batch of Peanut Snack could be cut almost in half.

The average processing loss of this product to the finished stage was 17 percent. The average loss was increased by the fact that a few of the batches were almost a total loss. This, of course, affected the cost of the finished product.

Another factor that decreased efficiency and increased costs was the irregular production schedule set up in order not to conflict with peanut-butter plant operations. The operations were for 2 or 3 days per week, four or five times during a 2-month period. This necessitated setting up production lines anew.

The cost of packaging materials, labor, and overhead was about the same for each flavor of Peanut Snack. However, the cost of ingredients per 1,000 pounds was $165.00 for orange-flavored, $223.01 for chili-flavored, and $213.78 for maple-flavored products. The cost per finished pound of orange-flavored product was 42 cents, and that of the other flavors was slightly higher.

RETAIL SALES OF PEANUT SNACK

Purpose. Tests on sales of Peanut Snack and consumer reactions were made to obtain information on commercial prospects of the product. Reasonable conclusions were needed to predict the outcome should a food company decide to manufacture and distribute the new product. Actual sales records and interviews with consumers provided about the only possible source of information of value for the purpose.

Selection of Stores. Peanut Snack was marketed experimentally in Atlanta and Griffin, Ga., through retail stores in selected areas of these two cities. In Atlanta one store was selected in each of three areas representative of high-, medium-, and low-income groups. In Griffin one store that draws customers from all income levels was selected.

Distribution and Storage. The product was kept in refrigerated storage and delivered as needed to the retail stores. Upon receipt at the retail stores it was immediately placed in the cold-storage room from which the retail shelf was supplied. It should be stored under refrigeration at a temperature of 48° F. or lower, and a humidity of not more than 60 percent. Although rancidity is not a problem, cold storage is necessary to prevent seepage or crawling of the oil, and to prevent mold. Molding was a storage problem associated more with high humidity than high temperature. There was no molding when the product was stored at 75 percent relative humidity, irrespective of temperature. Also important is that it be stored away from foods or products with odor, since peanut butter absorbs such odors readily. These rules were observed in the retail storage. Subsequent observations show that when properly stored, the flavors and other qualities of Peanut Snack were retained almost perfectly for a year. Because there is no head space in the container, Peanut Snack keeps better in casings than Peanut Spread keeps in jars.

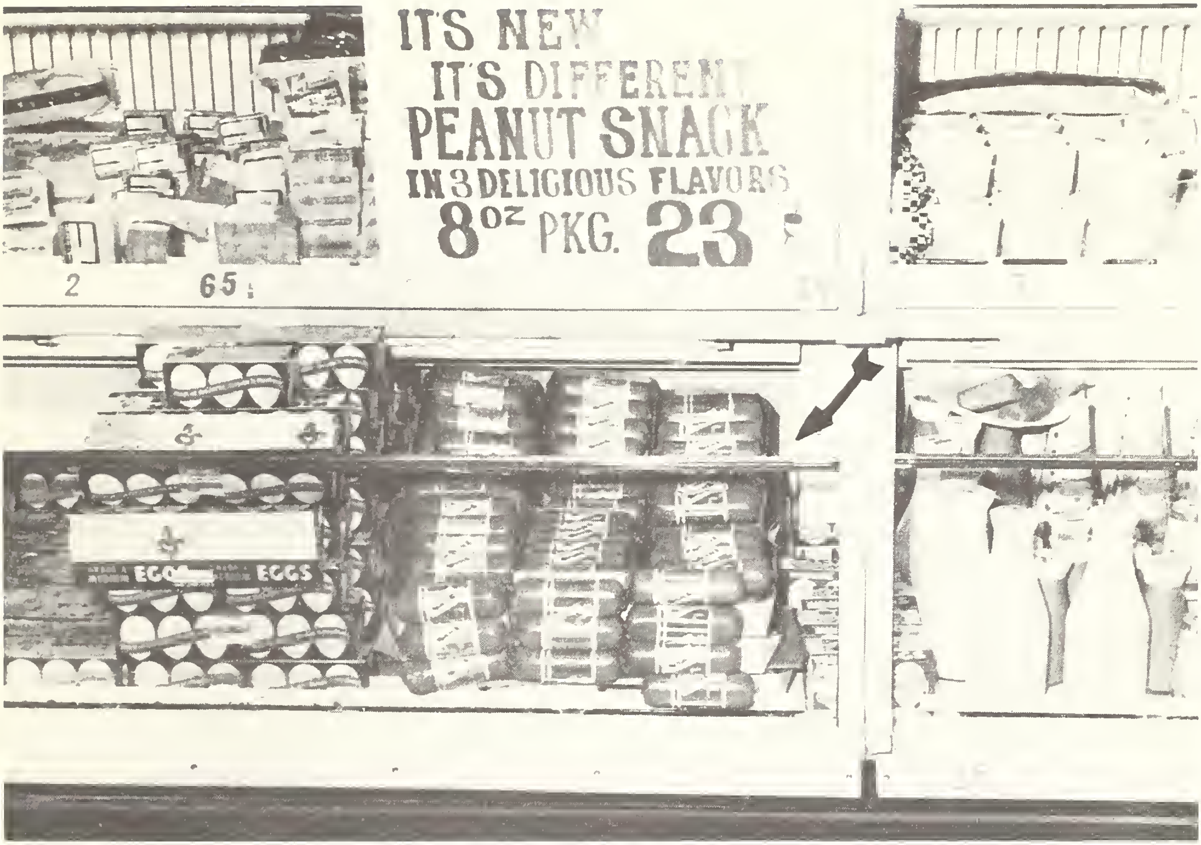

Figure 4.--Display of Peanut Snack in a store at Griffin, Ga.

Place in the Store. In the four retail stores the product was displayed for self service in refrigerated open-topped glass-paneled display cases. Peanut Snack was given equal prominence with other products that require refrigeration, such as butter and cheese. The displays in the Griffin, Ga., store are shown in figures 4 and 5. Similar displays were made in the Atlanta stores.

Time of Beginning Retail Sales. The product was first offered to consumers in the Griffin store in January 1951, and in the three Atlanta stores in March 1951.

Advertising. Three forms of advertising the product were used for initiating sales at the Griffin store: (1) Posters were used on the front windows of the store; (2) a placard was hung on the display shelf in the store; and (3) a demonstration of the product was made for the first 2 days of sales by an experienced food demonstrator stationed in the store. Each customer was offered a sample of the product on a small round cracker. There was a supply for sale. The store's regular weekly advertisement in the local daily newspaper mentioned the product.

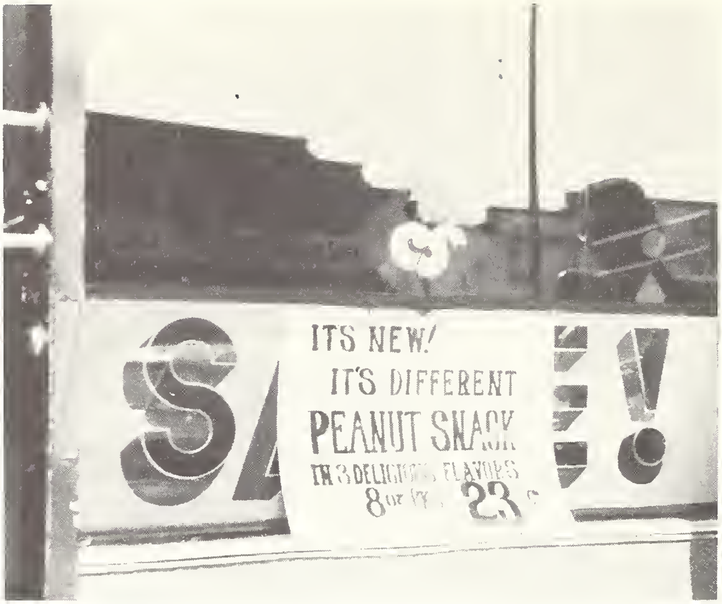

Figure 5.--Typical poster used in the front window of chain stores where Peanut Snack was on sale for an experimental period of about 5 months.

Price. The price in the Griffin store was set at 23 cents for an 8-ounce package. This figure was arrived at after consultation with the store manager and by comparison with the prices of leading peanut butter brands. No effort was made to charge the actual cost of manufacturing because costs for a small lot on an experimental basis were higher than would be the case in commercial production. The product was left at the store on consignment basis and the store received 5 cents out of each 23 cents, for handling. Price in all three Atlanta stores was set at 25 cents per package. This price was arrived at in much the same manner as in the Griffin store.

Shelf Life. Peanut Snack has a relatively long shelf life when held under refrigeration. However, when handled excessively, or held for periods of 24 hours at normal retail store temperature, the package loses its form and oil crawls from the ends of the package, causing discoloration or grease spots on the label. The chief need for refrigeration is to prevent crawling of the oil and to preserve form of the package. This was accomplished at 48° F. or lower.

Sales. During the period that Peanut Snack was on sale, approximately 1,500 8-ounce packages were sold. Orange was the most popular flavor, maple second, and chili third. The retail groceries in which Snack was sold reported some repeat sales, and some calls for Snack when it was removed from the shelves. According to sales managers in the participating stores, Snack was not a fast seller. They pointed out, however, that it was a new product which had received very little advertising.

A SURVEY OF CONSUMER REACTION TO PEANUT SNACK

Purpose. A survey of consumers' reaction to Peanut Snack, after they had a chance to test it in their homes, was made in the Atlanta and Griffin communities to determine the factors that consumers liked or disliked--the taste, flavor, and package--how they used the product, and when they served it. The survey was made after Peanut Snack had been on sale for about 5 months. Such information should be useful to a processor who might process and distribute the Snack.

Method. Free samples of the product were distributed to customers in the stores by women experienced in store demonstration work. Each woman customer who passed the display was offered one package of each of the three flavors, or her choice of any of them. Consumers were asked to try the product in their homes and consent to a telephone interview at a later time. If they accepted the product, their names, telephone numbers, and suggested times for telephoning were recorded. They were given information about the background and the special features of the product, were told how to store and use it, and were handed a pamphlet about it. They also were given instructions for completing the forms needed for the telephone listings.

It required about 3 days in each store to record a total of 1,246 consumers' names and telephone numbers; 975 in the Atlanta stores and 271 in the Griffin store.

Telephone interviewing began about a week after the first samples were given out. The telephone interviewers were not always the same persons who did the store interview work. The interviewers were told of the characteristics of the product, objectives of the study, and objectives of each question, and each had a written set of instructions. Each interviewer conducted four practice interviews before starting regular work. The supervisor worked closely with each interviewer during her first day's work. All interviewers edited their own questionnaires immediately after completion of the interview. The supervisor gave all questionnaires a final editing.

A total of 1,114 telephone interviews were made and answers and comments concerning the product were recorded. A summary of the data obtained follows, together with comments which form the basis for judgments concerning commercial possibilities of the product.

Flavors Accepted by Consumers. All three flavors were accepted by 434 store customers. Some accepted only one of the three flavors, and some took a combination of two of them. It was noted that some customers were reluctant to accept all three flavors because of the quantity and fear of unforseen obligations. Possibly smaller samples would have been more readily accepted by these particular customers. At the time of the interviews not all consumers had taste-tested all the flavors accepted.

Most of those who accepted three flavors had tested all of them and freely expressed their opinions of them as to taste and other characteristics. As a few consumers who had accepted all three flavors had tasted only one or two of them, their numbers are recorded in table 1 according to the flavors tested so that their comments are related only to the flavors actually tested. More than one-third of the respondents had tested all three flavors.

TABLE 1.--Flavors of Peanut Snack tested by consumers

Flavor tested	Consumers	Percentage
	Number	*Percent*
All three flavors	407	36.5
Maple only	94	8.4
Orange only	185	16.6
Chili only	60	5.4
Maple and orange	273	24.5
Maple and chili	38	3.4
Orange and chili	57	5.2
Total	1,114	100.0

Reaction of Consumers. Consumers were asked if they liked the product. Their answers were recorded along with any qualifying statements. A compilation of their answers is shown in table 2. The data in the table are combined irrespective of flavors accepted and therefore the individual likes and dislikes refer only to flavors tested. More than three-fourths of those respondents testing Snack like it--46 percent without qualification and 32 percent with qualifications.

TABLE 2.--Reaction of consumers to Peanut Snack

Item	Consumers	Percentage
	Number	*Percent*
Liked product--unqualified	516	46.3
Liked product--qualified	353	31.7
Did not like product--unqualified	179	16.0
Did not like product--qualified	63	5.7
Did not care one way or other	3	.3
Total	1,114	100.0

Reasons for Liking Peanut Snack. During the telephone conversations the respondents who said they liked the product were asked to express their reasons for liking it. They were encouraged to express their reason in their own words. Such "open-end" questions brought forth a wide range of answers. However, many of the answers were relative to a major factor even if expressed in different terms. For example, all answers which concerned the taste of the product were put into one category for tabulation. Of the total 1,114 consumers, 869 liked the product, and 674 gave taste or flavor as the reason for liking it. Some respondents gave detailed reasons for their liking it, such as the flavors blend well with peanuts, and the sweet flavors combine well with peanuts and improve the taste of peanut butter (table 3). Reasons for liking the product averaged about 2 per person interviewed.

TABLE 3.--Reasons given by consumers for liking Peanut Snack[1]

Reason	Consumers	Percentage
	Number	*Percent*
Taste or flavor	674	60.5
Flavor blended well with peanuts.	298	26.1
Combination of peanut and sweet flavors	228	20.5
Improved taste of peanut butter	65	5.8
Good texture	155	13.9
Keeping qualities	76	6.8
Nice, wonderful, enjoyed	210	18.8
Easy to prepare and serve	218	19.6
Attractive to serve	70	6.3
Nourishing and healthful	37	3.3
Something different	105	9.4
Children liked	153	13.7
Good as a confection	25	2.2
Liked everything about Snack	112	10.1
Other	112	10.1

[1] Some consumers gave more than one reason.

Typical of all the favorable comments were: "We've enjoyed them, son liked the chili flavor -- that little tang -- both the others were delicious." "It was a wonderful between-meal snack -- very good with a soft drink." "I liked them -- they have a nice flavor -- easy to handle because you can slice off one piece and use it, then return the package to the refrigerator." "The children loved them because they're used to peanut butter and jelly -- the packaging was nice because it was the right size for a cracker and kept nicely in the film wrap."

Children under 16 years of.age were reported in 609 of the 1,114 families. Persons interviewed reported 613 children under 16 years old, of whom 545 ate some of the Snack. Where there were children in the family, in the majority of cases the children liked Snack better than the adults did; however, there was a minority group in which the adults liked it better than did the children.

Reasons for Disliking Peanut Snack. Those who disliked the product were asked to specify reasons for not liking it. Many of them gave more than one reason so that the number of reasons given exceed the number of people who disliked Snack. Also, many who stated that they liked the product went on to modify their statements by suggesting an improvement in flavor, taste, or other characteristics. This was presumed to mean that they also had some dislike for it. Consequently, some consumers may be counted as both liking and disliking the product in the data in the tables. The taste of the product was the main reason given for their dislike and was also the main reason given for liking it by those who said that they did like the Snack. Some did not like the texture and some preferred plain peanut butter (table 4).

TABLE 4. Reasons given for disliking Peanut Snack[1]

Reason	Consumers who did not like product		Consumers who liked product--qualifiedly	
	Number	*Percent*	*Number*	*Percent*
Taste or flavor	211	87.2	264	74.8
Texture	69	28.5	79	22.4
Keeping qualities	1	0.4	6	1.7
Prefer a spread	28	11.6	41	11.6
Prefer peanut butter	119	49.2	0	0
Disliked everything about Snack . . .	70	28.9	0	0
Total	242	100	353	100

[1] Some consumers gave more than one reason.

Comments related to taste or flavor were combined, although the comments were concerned with various aspects of taste and flavor. Most usual comments were that orange and maple flavors were too sweet; chili needed "pepping up," or that one couldn't taste the chili, the chili was too weak; the respondents didn't like mixtures of flavors of peanuts, sweetness, and artificial flavors; they didn't like the particular flavor added; and they didn't like any form of peanut butter.

Comments relative to texture were mostly to the effect that it was too dry and crumbly.

Typical adverse comments of respondents, mostly housewives, were "Well, frankly we didn't like it. The texture was too coarse. The maple flavor was awful, too sweet and just didn't go with the peanut." Another said, "We like peanut butter very much, but never liked it with jelly or sweets. None of the children I served it to liked it with the flavoring added." A fairly common statement was: "My husband didn't care too much for it -- we had a visitor at the time -- they didn't care for the orange and maple sweetish taste."

Reaction of Consumers to Package. Consumers were asked to express their like or dislike for the package. Their responses to this question are tabulated in table 5. They expressed themselves overwhelmingly in favor of the kind of package. Even some of those who did not like the product apparently thought the package was good.

TABLE 5.--Reaction of consumers to package containing Peanut Snack

Item	Consumers	Percentage
	Number	*Percent*
Liked package--unqualified	911	81.7
Liked package--qualified	90	8.1
Did not like package--unqualified	70	6.3
Did not like package--qualified	17	1.5
Did not pay any particular attention to it	15	1.4
Unknown	11	1.0
Total	1,114	100.0

The slicing feature of the Peanut Snack was mentioned most frequently by consumers as a reason for liking the package. The package could be easily sliced with a sharp kitchen knife. The only disadvantage in slicing was the toughness of the transparent film which would not cut easily with a dull knife. The added flavor and sweetening together with the slicing feature eliminated the need for mixing peanut butter with other ingredients or spreading it in sandwiches. Also, when sliced the slice of Snack fitted well on small crackers, a favorite way of eating the Snack. The number of consumers who named specific desirable features of the package is tabulated in table 6.

TABLE 6.--Reasons given by consumers for liking Peanut Snack package[1]

Reason	Consumers	Percentage
	Number	*Percent*
Size, shape, and ease of storage	495	44.4
Convenience in handling and using	294	26.4
Advantage of package compared with jar	130	11.7
Slicing features	645	57.9
Keeping qualities	285	25.6
Neat and nice	212	19.0
Advantage of cellophane wrapper	90	8.1
Less waste	21	1.9
Liked everything about package	99	8.9

[1] Some consumers gave more than one reason.

The size, shape, and consequent ease of storage were popular features of the package as shown by the large number of times consumers referred to these features in a favorable way. Eighty-seven percent of the consumers thought they preferred the 8-ounce size (table 7). Of course, the Snack being highly concentrated and specifically designed to use between meals would be used in small amounts at any time.

TABLE 7.--Consumers' preference concerning size of package of Peanut Snack

Item	Consumers	Percentage
	Number	*Percent*
Preferred larger	38	3.4
Preferred smaller	57	5.1
Liked in present size	969	87.0
Didn't care	40	3.6
Other	10	.9
Total	1,114	100.0

Ways Used by Consumers. Ways of using the Snack were suggested to consumers when they accepted the samples. Also, those given the Snack were handed a small pamphlet suggesting different ways of serving it. When they were interviewed most consumers reported using it in sandwiches, by itself, much in the same way that peanut butter is used. They used bread or crackers for making sandwiches. A considerable number of those making sandwiches served the sandwiches with other food and drink, but this group was in the minority. A small but important number consumed the Snack without making sandwiches or without combining it with any other food. Those eating the Snack alone apparently had discovered the confectionary characteristics (table 8).

TABLE 8.--Number of consumers using specified flavors of Snack according to way served[1]

Way served	Kind of Snack					
	Chili-flavored		Maple-flavored		Orange-flavored	
	Number	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Sandwich by itself	504	89.7	575	70.8	640	69.4
Sandwich with other food or drink	-	-	228	28.1	269	29.2
Soup	10	1.8	-	-	-	-
By itself	46	8.2	110	13.5	140	15.2
Other	70	12.5	103	12.7	131	14.2
Unknown	9	1.6	5	.6	5	.5
Total[1]	562	100.0	812	100.0	922	100.0

[1] Individual ways will add to more than the total because some consumers used the Snack in more ways than one.

Nearly all the consumers interviewed -- 1,038 or about 93 percent--had purchased peanut butter during the last year. Of this number most of them said they used the Peanut Snack in about the same way that they used peanut butter (table 9).

Time of Serving. Snacks were used more between meals than for regular meals (table 10). Of course, Snack was used by many consumers at more than one time, but mostly at the noon meal and between meals. The name alone was perhaps enough to cause many consumers to try the Snack between-meals.

TABLE 9.--Consumers who had purchased peanut butter in last year and who used Peanut Snack in same ways as peanut butter

Item	Consumers	Percentage
	Number	*Percent*
Consumers who had purchased peanut butter in last year	1,038	93.2
Consumers who used the Snack in same way as peanut butter	955	92.0

TABLE 10.--Time that Peanut Snack was served in the home[1]

Item	Consumers	Percentage
	Number	*Percent*
Noon meal	523	46.9
Evening meal	215	19.2
Between meals	924	82.9

[1] Some consumers used the Snack in more ways than one.

Repeat Purchases and Expanded Peanut Use. Repeat purchases are required for any product to become a commercial success. A large share of those trying Peanut Snack said they would purchase it again if it were available (table 11). The experiment would be a failure if consumers were buying Peanut Snack only as a substitute for peanut butter. This fact was not checked, but from the interviews, it appears probable, however, that as a whole consumers would purchase more peanut products if the Snack were available.

TABLE 11.--Number of consumers who said they would buy Peanut Snack again if available

Item	Consumers	Percentage
	Number	*Percent*
Will buy	804	72.1
Will not buy	173	15.6
Depends	123	11.0
Undecided	6	0.5
Unknown	8	0.8
Total	1,114	100.0

THE MANUFACTURE OF PEANUT SPREAD

From experience with Peanut Snack (which was recommended for slicing rather than for spreading), it was evident that many consumers tried to spread it, and thus indicated their particular desire for a spread. Therefore, it was decided to make an equal quantity (4,000 pounds) of flavored peanut butter, modified as to consistency so that it would spread more easily than regular peanut butter, and with added flavoring and sweetening ingredients to give variety.

As the limited experience with Peanut Snack indicated that orange and maple were suitable flavors to be added to peanut butter, whereas chili was not, the contractor decided to use these two desirable ones in the manufacture of Peanut Spread and to substitute chocolate for chili. Taste-panel studies at the Georgia Experiment Station several years previously had shown that chocolate flavor in peanut butter was liked.

Steps in the manufacture of Peanut Spread were similar to those in making regular peanut butter with one major exception. (See figs. 1 and 6.) After the roasted peanuts were cooled, blanched, and inspected, the other ingredients were mixed with the peanuts before grinding. The introduction of this "batch operation" into an otherwise "continuous operation" required more time and labor than the manufacture of regular peanut butter. It is believed that all of the ingredients can be added automatically, as salt and hydrogenated oil are now added, by the use of several automatic feeding machines in the production line. Table 20 in the Appendix gives costs of processing 1,000 pounds of Peanut Spread and table 21 gives formulas used.

The Quality of Peanut Spread. The spreadability of Peanut Spread was superior to that of peanut butter, and the flavor of the orange and maple was excellent, according to reports received from taste panels and distributors of peanut products. Chocolate-flavored Peanut Spread was less desirable in color and flavor. Since there are more than a dozen forms of chocolate on the market, more work should be done on their respective suitability.

There was oil separation on all the Peanut Spreads after standing for 8 to 10 weeks. To prevent this, the product must either be kept refrigerated or hydrogenated oil must be added. Since it was packed in wide-mouth, 8-ounce glass jars, as is peanut butter, refrigeration was not originally considered advisable.

RETAIL SALES OF PEANUT SPREAD

Peanut Spread was marketed experimentally by (1) direct contact with self-service retail stores and (2) distribution through a wholesale grocery company at Griffin, Ga. Two self-service retail stores in the Griffin vicinity were selected for the experimental marketing of Peanut Spread, which was displayed on the shelves alongside peanut butter at a price in line with peanut butter. On the first day Peanut Spread was displayed, a demonstration was conducted with customers, similar to the demonstration of Peanut Snack. A wholesale grocery company which serves the area surrounding Griffin was furnished with cases of each flavor of Peanut Spread for its salesmen to sell on their regular weekly canvass of the trade. These salesmen cover a territory within about a 50-mile radius from Griffin, Ga. No advertisements or special posters were used.

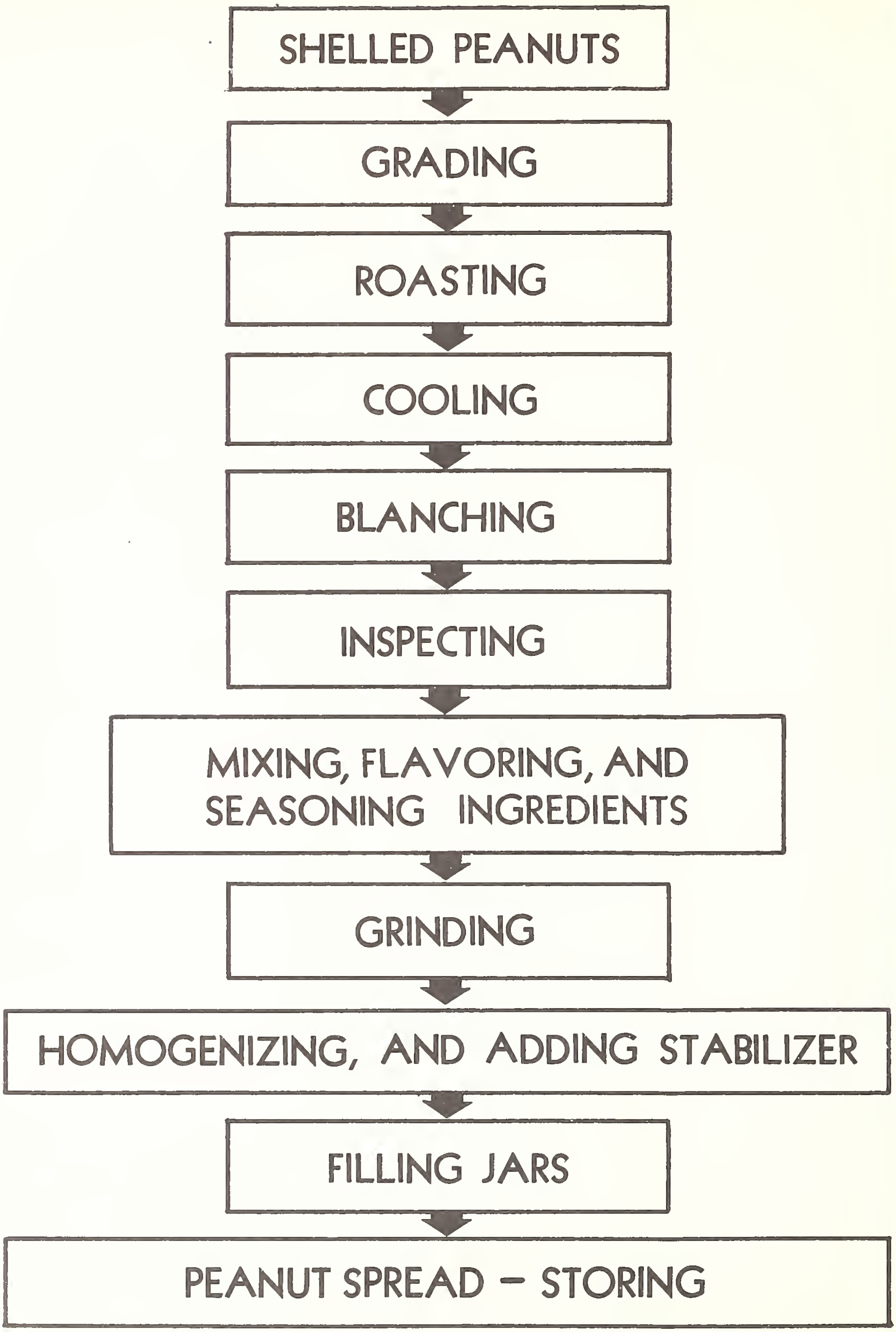

Figure 6.--Diagrammatic flow sheet for the manufacture of Peanut Spread. The processing steps are identical with those for regular peanut butter, except the sixth step, in which the flavoring and seasoning ingredients are added by batch operations.

Marketing Peanut Spread paralleled the marketing of peanut butter from the processing plant to the consumer. Peanut butter reaches the retailer through local wholesale grocery companies, through central wholesalers, and by direct shipments from the factory. Large independent retail stores get shipments direct from factories, or buy from brokers who also sell as large central wholesalers.

After observing the retail sales of Peanut Spread, it was the opinion of the contractor and the participating retail grocers that it sold about like peanut butter. The limited number of retailers and wholesalers participating in this project indicated that they consider peanut butter a slow-moving product. Some customers would purchase the regular peanut butter in addition to Spread, they believe, whereas others would purchase the Spread when no purchase of peanut butter was contemplated. Thus, Peanut Spread and likewise Peanut Snack -- *would* increase total peanut butter consumption, although obviously not by the total amount of sales of Spread and Snack. The exact factor of increase remains a matter for factual determination, a determination that could not be made within this limited experiment.

APPENDIX

TABLE 12.--Peanuts: Acreage and production, by States and United States, 1950

State and area	1950[1]		Percentage of total		Average, 1946-50		Percentage of total	
	Acres	Production	Acres	Production	Acres	Production	Acres	Production
	1,000	*1,000 pounds*	*Percent*	*Percent*	*1,000*	*1,000 pounds*	*Percent*	*Percent*
Virginia-Carolina area:								
Virginia	146	224,110	6.4	11.1	152	209,352	5.3	10.0
North Carolina	231	246,015	10.0	12.2	270	281,871	9.4	13.5
Tennessee	5	4,000	.2	.2	5	4,075	.1	.1
Total	382	474,125	16.7	23.5	427	495,298	14.8	23.6
Southeast area:								
South Carolina	20	15,800	.9	.8	24	15,900	.8	.8
Georgia	735	679,875	32.2	33.6	980	721,651	33.9	34.5
Florida	72	59,040	3.2	2.9	90	62,269	3.1	3.0
Alabama	332	325,360	14.6	16.1	413	304,372	14.3	14.6
Mississippi	13	5,525	.6	.3	14	5,305	.5	.2
Total	1,172	1,085,600	51.5	53.7	1,521	1,109,497	52.6	53.1
Southwest area:								
Arkansas	7	3,325	.3	.2	8	3,340	.3	.2
Louisiana	3	1,020	.1	.1	3	1,145	.1	.1
Oklahoma	216	125,280	9.5	6.2	248	131,112	8.6	6.3
Texas	490	323,400	21.6	16.0	672	341.591	23.3	16.3
New Mexico	7	6,545	.3	.3	9	8,985	.3	.4
Total	723	459,570	31.8	22.8	940	486,173	32.6	23.3
United States	2,277	2,019,295	100.0	100.0	2,888	2,090.968	100.0	100.0

[1] From reports of the Bureau of Agricultural Economics.

TABLE 13.--Peanuts picked and threshed, acreage, yield per acre, production, and value of crops, 1909-51, United States[1]

Crop of--	Total average harvested	Yield per acre	Production picked and threshed	Price	Farm value
	1,000 acres	*Pounds*	*1,000 pounds*	*Cents per pound*	*1,000 dollars*
1909	537	660.3	354,605	4.07	14,449
1910	464	827.3	383,875	4.01	15,398
1911	472	775.0	365,800	4.23	15,475
1912	480	753.4	361,625	4.44	16,053
1913	465	823.7	383,000	4.50	17,244
1914	526	800.5	421,075	4.23	17,809
1915	617	779.1	480,680	4.14	19,886
1916	878	758.5	665,950	4.84	32,209
1917	1,314	752.4	988,705	7.03	69,478
1918	1,326	713.4	945,975	6.51	61,597
1919	957	719.2	688,270	9.30	64,002
1920	995	699.3	695,842	4.75	33,053
1921	980	692.0	678,200	3.84	26,020
1922	821	637.4	523,345	5.34	27,929
1923	797	712.9	568,150	6.45	36,653
1924	1,084	657.6	712,815	5.78	41,187
1925	996	724.6	721,660	4.27	30,836
1926	860	770.0	662,190	5.04	33,382
1927	1,086	777.4	844,220	5.15	43,470
1928	1,213	695.4	843,505	4.88	41,183
1929	1,262	711.7	898,197	3.73	33,533
1930	1,073	649.9	697,350	3.51	24,462
1931	1,440	733.2	1,055,815	1.62	17,144
1932	1,501	627.0	941,195	1.55	14,587
1933	1,217	673.5	819,620	2.85	23,328
1934	1,514	670.0	1,014,385	3.28	33,293
1935	1,497	770.1	1,152,795	3.14	36,181
1936	1,660	759.0	1,260,020	3.72	46,931
1937	1,538	801.5	1,232,755	3.30	40,630
1938	1,692	761.7	1,288,740	3.27	42,126
1939	1,908	636.0	1,213,110	3.40	41,224
1940	2,052	861.0	1,766,590	3.33	58,850
1941	1,900	776.0	1,475,205	4.66	68,746
1942	3,355	654.0	2,192,800	6.08	133,248
1943	3,528	617.0	2,176,420	7.12	155,025
1944	3,068	678.0	2,080,825	8.04	167,352
1945	3,160	646.0	2,042,235	8.27	168,878
1946	3,142	649.0	2,038,355	9.10	185,399
1947	3,380	646.0	2,182,895	10.10	220,360
1948	3,311	706.0	2,338,470	10.50	246,495
1949	2,332	804.0	1,875,825	10.40	194,696
1950	2,277	887.0	2,019,295	10.09	220,128
1951[2]	1,990	802.0	1,595,025	10.05	167,543

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[1] BAE.

[2] Preliminary.

TABLE 14.--Shelled peanuts by use, 1948-49, 1949-50 and 1950-51[1]

Item	Edible product					Crushed for oil	Total
	Candy	Salted peanuts	Peanut butter	Other	Total		
1948-49:							
Quantity........................1,000 lbs.	107,181	120,018	250,184	7,048	484,431	226,165	710,596
Percentage of total edible use.....percent	22	25	52	1	100	-	-
1949-50							
Quantity........................1,000 lbs.	126,287	118,291	256,168	9,363	510,109	414,949	925,058
Percentage of total edible use.....percent	25	23	50	2	100	-	-
1950-51							
Quantity........................1,000 lbs.	118,208	133,100	273,209	6,296	530,813	414,541	945,354
Percentage of total edible use.....percent	22	25	52	1	100	-	-

[1] Data from BAE: Peanuts, Stocks and Processing Reports; season September 1 to August 31.

TABLE 15.--Shelled peanuts in edible use by type and product, 1948-49 and 1949-50[1]

Product	Type distribution						Total	
	Virginia		Runner		Spanish			
	1948-49	1949-50	1948-49	1949-50	1948-49	1949-50	1948-49	1949-50
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*1,000 percent*	*1,000 percent*
Candy..............	18.0	16.1	4.3	8.8	77.7	75.1	100.0	100.0
Salted peanuts.......	74.8	70.9	.4	2.2	24.8	26.9	100.0	100.0
Peanut butter........	12.4	8.9	26.4	40.5	61.2	50.6	100.0	100.0

[1] Data from BAE: Stocks and Processing Reports; seasons September 1 to August 31.

TABLE 16.--Peanut butter: Shelled peanuts used in manufacture of, and estimated production, 1943-50

Year[1]	Shelled peanuts used[2]	Production of peanut butter	
		Total[3]	Per person
	Million pounds	*Million pounds*	*Pounds*
1943	345	293	2.1
1944	300	255	1.8
1945	333	283	2.0
1946	259	220	1.5
1947	251	213	1.5
1948	250	213	1.4
1949	256	218	1.4
1950	273	232	1.5

[1] 1943 calendar year; 1944 to date, year beginning September 1, 1944.
[2] Data from BAE: Peanuts, Stocks and Processing reports.
[3] 85 percent of the quantity of shelled peanuts used.

TABLE 17.--Nutritive value of one pound of selected foods as purchased[1]

Item	Unit	Peanut butter	Peanuts roasted in shell	Beans, red kidney	Beans, lima	Beef		Pork
						Rib roast	Round steak	Fresh ham
						Without bone	*With bone*	*With bone*
Refuse	Percent	-	28.0	-	-	-	10.0	14.0
Food energy . . .	Calories	2,615	1,829	1,526	1,514	1,275	747	1,345
Protein	Grams	118.5	88.0	104.9	94.0	79.0	79.8	59.3
Fat	Grams	217.0	144.5	7.7	5.9	104	45	121
Carbohydrates . .	Grams	95.3	77.2	269.7	279.7	-	-	-
Calcium	Milligrams	336	242	740	309	45	45	35
Phosphorus	"	1,784	1,285	1,984	1,730	676	736	655
Iron	"	8.6	6.2	31.3	34.0	11.8	11.9	9.0
Vitamin "A" value	IU	-	-	-	-	-	-	-
Thiamin	Milligrams	.54	.96	2.58	2.18	.34	.34	2.88
Riboflavin. . . .	"	.60	.43	.98	.80	.70	.71	.69
Niacin.	"	73.5	53.0	11.5	8.9	19.0	19.1	15.4
Ascorbic Acid. .	"	-	-	8	8	-	-	-

[1] USDA Handbook No. 8, "Composition of Foods."

Peanut butter and its methods of manufacture are continually changing. The most popular brands on the market now are quite different from those 10 or 20 years ago. They differ in consistency, flavor, type of container, and in methods of manufacture and distribution.

TABLE 18.--Formulas for 100-pound batches of Peanut Snack

Ingredient	Flavor		
	Orange	Maple	Chili
Peanuts (butter)	67 lb. 3 oz.	69 lb. 10 oz.	80 lb. 11 oz.
Hydrogenated oil	2 lb.	2 lb. 4 oz.	2 lb. 4 oz.
Glycerine	-	-	1 lb. 5 oz.
Monosodium glutamate	-	-	3.3 grams
Onion salt	-	-	8 oz.
Chili powder	-	-	16 oz.
Maple (extract)	-	14. cc	-
Vanilla (extract)	-	5 oz.	-
Orange oil	31 grams	-	-
Salt and other[1]	15 oz.	1 lb. 1 oz.	1 lb. 8 oz.
Dry skim milk	-	-	10 lb. 8 oz.
Dextrose	24 lb. 7 oz.	12 lb. 1 oz.	2 lb. 5 oz.
Malted milk	-	12 lb. 8 oz.	-
Powdered sugar	3 lb. 2 oz.	3 lb. 2 oz.	-

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[1] 0.05 percent butylated hydroxyanisole (includes 0.01 percent BHA +0.003 percent propylgallate +0.002 percent citric acid) added to total product weight; and 4.11 percent butylated hydroxyanisole added to salt.

TABLE 19.--Processing cost for Peanut Snack per 1,000 pounds finished product, according to specified flavors

Item	Flavor		
	Orange	Chili	Maple
	Dollars	*Dollars*	*Dollars*
Materials:			
Tubing	6.57	6.57	6.57
Cartons	9.01	9.01	9.01
Cases	4.00	4.00	4.00
Cord	6.00	6.00	6.00
Labels	5.67	5.67	5.67
Labor:			
Common	105.00	105.00	105.00
Supervisory	18.00	18.00	18.00
Overhead:			
Steam, electricity, water, miscellaneous	3.00	3.00	3.00
Ingredients:[1]			
Peanuts	129.89	155.94	134.55
Hydrogenated oil	7,60	8.55	8.55
Orange oil	5.50	-	-
Salt and other[2]	.29	.45	.32
Dextrose	18.87	1.77	9.28
Powdered sugar	2.85	-	2.94
Dry skim milk	-	34.13	-
Onion salt	-	5.90	-
Chili powder	-	9.00	-
Glycerine	-	7.15	-
Monosodium glutamate	-	.12	-
Maple	-	-	.75
Vanilla	-	-	5.39
Malted milk	-	-	52.00
Total	322.25	380.26	371.03

[1] Normal shrinkage as loss in weight of peanuts when processed into peanut butter is 12 percent. Dry skim milk, onion salt, chili powder, maple, vanilla, malted milk, and powdered sugar were bought at wholesale prices, but in small packages. Costs of orange oil, cord, and overhead were estimated.

[2] 0.05 percent butylated hydroxyanisole (includes 0.01 percent BHA +0.003 percent propylgallate +0.002 percent citric acid) added to total product weight, and 4.11 percent butylated hydroxyanisole added to salt.

TABLE 20.--Processing cost for Peanut Spread per 1,000 pounds finished product, according to specified flavors

Cost item	Cost by flavor			
	Orange	Maple	Chocolate	Peanut butter[1]
	Dollars	*Dollars*	*Dollars*	*Dollars*
Materials:				
Glass jars (including cases)	66.40	66.40	66.40	66.40
Labels for jars	9.50	9.50	9.50	9.50
Labor:				
Supervisory	6.00	6.00	6.00	6.00
Common	22.50	22.50	22.50	22.50
Overhead:[2]				
Steam, electricity, water, miscellaneous	5.00	5.00	5.00	5.00
Ingredients:				
Peanuts[3]	173.38	167.01	168.75	188.17
Powdered sucrose	9.03	5.23	9.50	-
Salt	.30	.30	.30	.30
Malted milk	-	30.37	-	-
Cocoa	-	-	11.10	-
Vanilla flavoring	-	7.02	-	-
Maple flavoring	-	1.50	-	-
Hydrogenated oil	-	-	-	4.75
Orange oil[2]	12.00	-	-	-
Total cost by flavor	304.11	320.83	299.05	302.62

[1] No flavoring or sweetening ingredients added.

[2] Estimated.

[3] Normal shrinkage of peanuts to peanut butter is 12 percent, by weight.

TABLE 21.--Formulas for 1000 pounds of "Peanut Spread," by flavor

Ingredients	Amount
ORANGE-FLAVORED	
Peanuts[1] (To make 900 lb., blanched, roasted)	1,008 lb.
Powdered sucrose	95 "
Salt	10 "
Orange oil (about 700 cc)	1½ "
MAPLE-FLAVORED	
Peanuts[1] (To make 867 lb., blanched, roasted)	971 lb.
Powdered sucrose	55 "
Malted milk	73 "
Salt	10 "
Vanilla (about 2 qt.)	65 oz.
Maple flavor (300 cc)	10 "
CHOCOLATE-FLAVORED	
Peanuts[1] (To make 876 lb., blanched, roasted)	981 lb.
Powdered sucrose	100 "
Cocoa	37 "
Salt	10 "
UNFLAVORED	
Peanuts[1] (To make 977½ lb., blanched, roasted)	1,094 lb.
Hydrogenated oil	12½ "
Salt	10 "

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[1] Normal shrinkage of peanuts to peanut butter is 12 percent, by weight.

QUESTIONNAIRE

GEORGIA EXPERIMENT STATION AND RESEARCH DIVISION,
FATS AND OILS BRANCH, P.M.A.
UNITED STATES DEPARTMENT OF AGRICULTURE

BUDGET BUREAU NO. 40-5151
EXPIRATION DATE: 12-31-51
JUNE 4, 1951

CONSUMER PEANUT SNACK STUDY

TIME INTERVIEW AM
STARTED:_______ PM

OFFICE PAGE NO._______
OFFICE LINE NO._______

FLAVORS R
ACCEPTED:_______________
R'S TEL. NO._______________
STORE NAME:_______________

(READ INTRODUCTION)

1. FIRST, WOULD YOU TELL ME WHICH FLAVORS YOU HAVE TASTED? MAPLE ☐ ORANGE ☐ CHILI ☐

2. GENERALLY SPEAKING, WHAT ARE SOME OF THE THINGS YOU LIKED ABOUT THE PEANUT SNACKS?

____

____

____

____

____

____

____

____

____

____

3. SINCE THIS IS A NEW PRODUCT WE ARE ALSO VERY INTERESTED IN THE THINGS YOU DIDN'T LIKE. WHAT ARE SOME OF THE THINGS YOU DISLIKED ABOUT THE PEANUT SNACKS?

____

____

____

____

4. NOW AS FAR AS THE PACKAGE IS CONCERNED, WHAT ARE SOME OF THE THINGS YOU LIKED ABOUT THE PACKAGE?

____

____

____

5. WHAT ARE SOME OF THE THINGS YOU DISLIKED ABOUT THE PACKAGE? ____________________

____

____

6. WOULD YOU LIKE IT BETTER IF THE PACKAGE WAS LARGER OR SMALLER THAN IT IS NOW?

PREFERS LARGER ☐ PREFERS SMALLER ☐ LIKES AS IS ☐ DOESN'T CARE ☐

IF TASTED CHILI FLAVOR (SEE Q. 1) - IF DIDN'T TASTE CHILI, GO TO Q. 10

7. DID YOU USE ANY OF THE CHILI-FLAVORED SNACK IN SANDWICHES?.......... YES ☐ NO ☐

8. DID YOU USE ANY OF THE CHILI-FLAVORED SNACK IN SOUP?................ YES ☐ NO ☐

9. DID YOU USE ANY OF THE CHILI-FLAVORED SNACK IN ANY OTHER WAYS?...... YES ☐ NO ☐

IF YES

9A. WHAT OTHER WAYS DID YOU USE THE CHILI-FLAVORED SNACKS? ____________________

____

IF TASTED ANY ORANGE AND/OR MAPLE FLAVOR (SEE Q. 1) - IF DIDN'T TASTE ORANGE OR MAPLE, GO TO Q. 12

10. HOW DID YOU SERVE THE MAPLE (AND/OR ORANGE) FLAVORED SNACKS? (MAKE ENTRY BELOW)

11. WITH WHICH FOODS DID YOU SERVE IT? (MAKE ENTRY BELOW)

FLAVOR	10. HOW SERVED?	11. WHICH FOODS?
	A ____________	A ____________
	B ____________	B ____________
	C ____________	C ____________
	D ____________	D ____________

ASK EVERYONE

12. DID YOU SERVE ANY PEANUT SNACK AT A NOON MEAL?.................... YES ☐ NO ☐

13. DID YOU SERVE ANY PEANUT SNACK AT AN EVENING MEAL?................ YES ☐ NO ☐

14. DID YOU SERVE ANY PEANUT SNACK AS A BETWEEN-MEAL SNACK?........... YES ☐ NO ☐

15. BEFORE YOU RECEIVED THIS FREE SAMPLE HAD YOU EVER BOUGHT ANY OF THIS?

YES ☐ NO ☐ (GO TO Q. 16)

IF YES

15A. HOW MANY TIMES HAVE YOU (OR YOUR FAMILY) BOUGHT PEANUT SNACKS UP TILL NOW?

1 TIME ☐ 3 TIMES ☐

2 TIMES ☐ 4 OR MORE TIMES ☐ DON'T REMEMBER ☐

16. DO YOU THINK YOU'D LIKE TO BE ABLE TO BUY THIS (AGAIN)?

YES ☐ NO ☐ DEPENDS ☐ - ON WHAT? ________________________________

IF TASTED TWO OR THREE FLAVORS (SEE Q. 1) - IF TASTED ONE FLAVOR, GO TO Q. 18

17. YOU MENTIONED THAT YOU TASTED ____________________ FLAVORS. WHICH ONE OF THESE DID YOU LIKE BEST?

MAPLE ☐ ORANGE ☐ CHILI ☐ DIDN'T LIKE ANY OF THEM ☐

ASK EVERYONE

18. BEFORE I GO ON TO THE NEXT QUESTIONS, WOULD YOU PLEASE TELL ME IF YOU HAVE ANY CHILDREN UNDER 16 YEARS OF AGE LIVING AT HOME? YES ☐ NO ☐ (GO TO Q. 23)

IF YES

19. HOW MANY CHILDREN DO YOU HAVE? ONE ☐ TWO ☐ THREE ☐ FOUR OR MORE ☐

20. DID ANY OF THE CHILDREN EAT ANY OF THE PEANUT SNACKS?............. YES ☐ NO ☐

21. DID ANY OF THE ADULTS IN YOUR FAMILY, INCLUDING YOURSELF, EAT ANY OF THE PEANUT SNACKS? .... YES ☐ NO ☐

IF BOTH CHILDREN AND ADULTS HAVE EATEN IT

22. WHO WOULD YOU SAY LIKED IT BEST, THE ADULTS OR THE CHILDREN?

ADULTS LIKED IT BEST ☐ CHILDREN LIKED IT BEST ☐ BOTH LIKED ABOUT SAME ☐

ASK EVERYONE

23. HAVE YOU BOUGHT ANY PEANUT BUTTER DURING THE LAST YEAR?

YES ☐ NO ☐ - (GO TO Q. 26)

24. YOU MENTIONED THAT YOU USED THE PEANUT SNACKS FOR ______, ______, ______.
(SEE Q's 7 TO 11)

DO YOU EVER USE PEANUT BUTTER FOR ANY OF THESE THINGS?

YES ☐ NO ☐ - (GO TO Q. 26)

IF YES
25. WHICH OF THESE THINGS HAVE YOU USED THE PEANUT BUTTER FOR? ______

______, ______, ______, ______

ASK EVERYONE
26. NOW WE HAVE JUST ONE MORE QUESTION. IN ORDER TO KNOW JUST A LITTLE MORE ABOUT THE FAMILIES WHO HAVE USED THIS NEW PRODUCT, WOULD YOU PLEASE TELL ME WHAT KIND OF WORK THE MAIN WAGE EARNER IN YOUR FAMILY DOES?

______

THANK YOU VERY MUCH FOR YOUR COOPERATION.................... TIME INTERVIEW ENDED: ______ AM PM

RESPONDENT WAS VERY COOPERATIVE.... ☐

RESPONDENT WAS JUST SO-SO.......... ☐

RESPONDENT WAS UNCOOPERATIVE....... ☐

SHOPPER WAS INTERVIEWED........... ☐

SHOPPER WAS NOT INTERVIEWED........ ☐

PERSON INTERVIEWED WAS:

______
(ENTER RELATIONSHIP TO SHOPPER)

INTERVIEWER'S NAME: ______

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